Activity-Based Costing

Accounting for Operational Readiness

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Accounting for Operational Readiness

Activity-Based Costing (ABC) is a cost accounting system used by countless private-sector companies today, cross-cutting a variety of industries including manufacturing, telecommunications, financial services, and technology.

Far from new, Activity-Based Costing first surfaced as various commercial businesses began to experience difficulties in accounting for indirect and overhead costs. ABC solved this problem by directly tracing overhead costs to the processes that generate products (or outputs). By providing accurate cost measures, ABC has helped improve product costing, strategic pricing, and profit planning.

ABC is not really new to the public sector either. In the late 1940s, Government Performance Budgeting was first introduced to the federal government, an idea based on activity-based (or unit cost) resourcing principles. Many combat activities within DoD have been managing with cost-per-unit measures for some time. For instance, Air Force units that fly aircraft manage in "cost per flying hour." The Navy manages in "cost per steaming hour," and the Army in "cost per tank mile."

A powerful tool for measuring performance, Activity-Based Costing is used to identify, describe, assign costs to, and report on agency operations. A more accurate cost management system than traditional cost accounting, ABC identifies opportunities to improve business process effectiveness and efficiency by determining the "true" cost of a product or service.

ABC principles are used to focus management attention on the total cost to produce a product or service and as the basis for full cost recovery. Support services are particularly suitable for activity-based resourcing, as they produce identifiable and measurable units of output.

Why is Activity-Based Costing Important?

You can't compete—or even begin to compare—until you know how to cost. ABC is a cost accounting methodology that can provide definitions of processes, identify what the cost drivers of those

processes are, determine the unit costs of various products and services, and create various reports on agency components that can be utilized to generate activity- or performance-based budgets.

A major advantage of using ABC is that it avoids or minimizes distortions in product costing that result from arbitrary allocations of indirect costs. Unlike more traditional line item budgets which can't be tied to specific outputs, ABC generates useful information on how money is being spent, if a department is being cost-effective, and how to benchmark (or compare oneself against others) for quality improvements.

Fast Facts

- ABC is a management tool that provides better allocation of resources.
- ABC principles are applicable to both appropriations and revolving funds.
- ABC relates total cost (resources consumed) to work accomplished (outputs produced).
- The ABC or unit cost goal is a financial benchmark that represents an expectation of the maximum total cost incurred in the production of an output.
- ABC aligns costs to outputs thereby increasing cost visibility, and is useful in forecasting financial baselines.

Activity-Based Costing also provides a clear metric for improvement. It encourages management to evaluate the efficiency and cost-effectiveness of program activities. Some ABC systems rank activities by the degree to which they add value to the organization or its outputs. This helps managers identify what activities are really value-added—those that will best accomplish a mission, deliver a service, or meet customer demand, thus improving decision-making through better information, and helping to eliminate waste by encouraging employees to look at all costs. That is why an essential aspect of any ABC endeavor is to get a clear picture of the activities a business area performs. When employees understand the activities they perform, they can better understand the costs involved.

How it Works

ABC focuses on the activities of a production cycle, and it is based on the premise that outputs (products or services) require activities to produce, and that activities consume resources. It recognizes the causal relationship of cost drivers to activities. An output is defined as something "put out" at the end of a production process. It can be a good or service, and it must be measurable or quantifiable.

DoD activities are generally more complex than the example cited above, and often involve the production of more than one output. For example, a distribution depot handles millions of items, some of which require different resources to receive, store, and issue them. In these cases, DoD unit cost methodology uses output measures that are aggregated. To determine an organization's outputs, it must look at its core activities or processes—the things that it *does*. For example, an output at the Defense Finance Accounting Service (DFAS) might be an invoice paid.

In addition, unit cost activities also often fall into the service category as opposed to the manufacturing category. This can make the identification of outputs more difficult, as there is not always a physical product provided to the customer. For example, a research and development activity may be "employed" by one of the military services to test a specific missile system in addition to its basic research mission. Though it could be argued that a tested missile is a valid output, the diversity of services available to customers requires that a more common output be identified. In this case, direct labor hours expended in accomplishment of a task has been adopted as a surrogate or proxy output measure.

As a rule, outputs are:

- produced to satisfy customer requirements;
- distinctly quantifiable, measurable, and auditable;
- should be consistent from fiscal period to fiscal period to allow cost comparisons;
- should be incorporated into existing or modified financial management systems; and
- should be separately identifiable so costs can be more easily allocated.

The ABC system uses cost drivers to assign the costs of resources to activities. ABC can use unit cost as a way of measuring an output. Unit cost is simply the "average total cost" of producing one unit of output. It is calculated by dividing the total cost of production by the total number of units of output produced.

The Unit Cost Formula

Unit cost is the average total cost of producing one unit of output. It is calculated by dividing the total cost of production by the total number of units of output produced. For example, if an automobile manufacturer produces 50 vehicles for a total cost of $1,250,000, then the cost per unit (vehicle) is $25,000.

$$\text{Unit Cost} = \frac{\text{Total Cost}}{\text{Total Output}}$$

But unlike a company like General Motors, which calculates the unit cost for an automobile in order to determine an adequate selling price and profit margin, DoD providers normally do not build in a profit margin. Their goal is an accumulated operating result (AOR) of zero.

ABC . . . Back to the Basics

ABC's Basic Premise

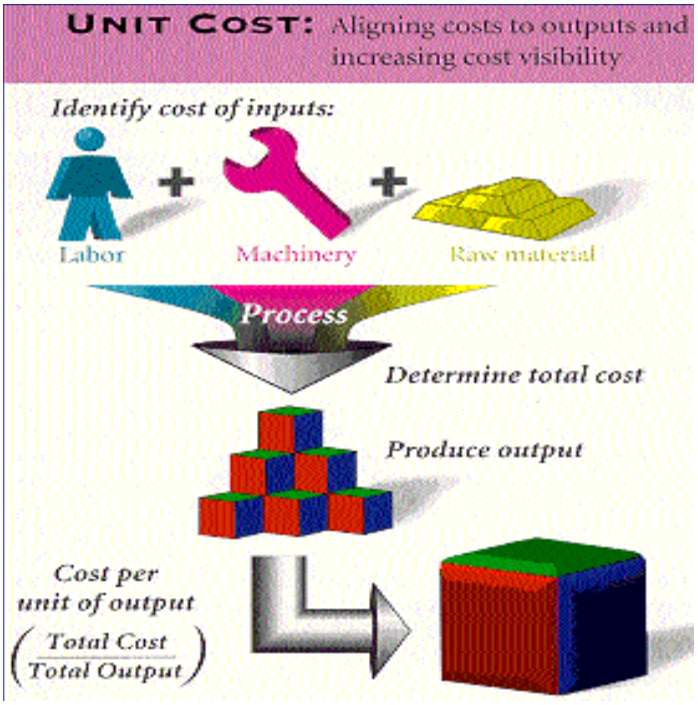
- Cost objects consume activities.
- Activities consume resources.
- This consumption of resources is what drives costs.
- Understanding this relationship is critical to successful budget management.

ABC's Basic Steps

1. Assign and analyze activities.
2. Gather cost data and trace costs to activities
3. Establish outputs.
4. Identify activity drivers and analyze costs.

ABC's Basic Benefits

- Makes it possible to determine total production costs traced to outputs.
- Targets areas needing management attention.
- Encourages the consideration of alternative methods of production.
- Highlights operational efficiency and inefficiency.
- Identifies financial benchmarks for activity performance.
- Generates more information to measure and reward performance, and prioritizes activities for cost reductions.
- Provides a common managerial framework among support activities.



Total Cost Visibility

Making clear connections between costs and outputs creates total cost visibility. Costs that are visible and explicit are essential to wise allocation of resources. Total cost visibility takes into account all the costs involved in a product or service (output). For example, military personnel, paid from a separate military pay appropriation account, were considered "free" assets. If military labor is required in a production process, the cost of military labor should be captured as part of the total cost associated with that production process—from the mechanic who repairs the vehicle to the finance clerk who processes a travel voucher. These are direct labor hours expended in order to meet a customer requirement.

In business, arriving at the true cost of a process is very important, because it:
- identifies moneymakers and money losers;
- finds an economic break-even point;
- permits comparison of different options; and
- facilitates opportunities for cost improvement and strategic decision-making.

The 4 Steps to ABC Implementation

1. Identify activities—this step requires an in-depth analysis of the operating processes of task area. Each process may consist of one or more activities required by outputs.

2. Assign resource costs to activities—this is sometimes called "tracing." Traceability refers to tracing costs to cost objects to determine why costs were incurred. DoD categorizes costs in three ways:

- *Direct*—costs that can be traced directly to one output. Example: the material costs (varnish, wood, paint, etc.) to build a chair.

- *Indirect*—costs that cannot be allocated to an individual output, in other words, they benefit two or more outputs, but not all outputs. Examples: the maintenance costs for the saws that cut and shape the wood, storage costs for the wood and other construction materials, quality standard assurance, etc.)

- *General & Administrative*—costs that cannot be reasonably associated with any particular product or service produced (overhead). These costs would remain the same no matter what output the activity produced. Examples: salaries of personnel in purchasing department, depreciation on equipment, plant security, etc.

3. Identify outputs—this step identifies all of the outputs for which activities are performed and resources consumed by an activity segment. Outputs can be products, services, or customers (persons or entities to whom a federal agency is required to provide goods or services).

4. Assign activity costs to outputs—in this step, activity costs are assigned to outputs using activity drivers. Activity drivers assign activity costs to outputs based on individual outputs'consumption or demand for activities. For example, a driver may be the number of times an activity is performed (transaction driver) or the length of time an activity is performed (duration driver).

Cost Behavior

It is important for managers to recognize how costs behave in order to plan and manage properly. There are basically three types of cost behavior:

Fixed—those costs that, over some specific time period, do not vary with quantity or output. For example, an annual lease that requires monthly rent payments, whether or not anything is produced, is a fixed cost.

Variable—those costs that vary directly with quantity of output. If nothing is produced, variable costs are zero. An example is the cost of materials used to repair radios. Each radio repaired requires one unit of material at some cost. The more radios repaired, the greater the material cost.

Semivariable—those costs that behave as fixed costs up to some minimum quantity of output, then, like variable costs, increase as the number of units of output increases. An example is electricity in a plant. Electricity is needed to light the plant regardless of the machinery operating. This would be the fixed component. Electricity would also be consumed in relationship to the utilization of the plant equipment. This would be the variable component.

Arriving at Unit Cost Goals

The unit cost goal is a financial benchmark which represents an expectation of what something "should cost"—the maximum allowable total cost incurred in the production of an output, based on the approved budget. Though the goal is stated on a per output basis (i.e., cost per direct labor hour or cost per dollar of sales), a business area's achievement of the goal is measured on total costs compared to total output.

In the area of Depot Maintenance, for example, a unit cost goal might be to not exceed $85 cost per direct labor hour. At the end of the fiscal year, if the direct labor hours worked were 1,750,000, then costs should not exceed $148,750,000. This formula is shown below:

1,750,000 direct labor hours x $85 = $148,750,000

(total output) x (unit cost goal) = total costs allowed

The Comptroller develops and issues unit cost goals at the component level for each support area. These goals are based on historical data and adjusted for known and anticipated changes in the budget year. The following factors can impact these goals:

- expected increases in the cost of inputs;
- increased productivity based on improved processes; and
- anticipated demand (weapon systems retirements, base closures, and changes in force structure should be included in demand projections).

It's important to distinguish between unit cost and a unit cost goal. Unit cost is the actual direct labor (or other direct costs), in addition to an allocated amount of actual indirect and G&Acosts incurred in producing an output. The unit cost goal is a fiscal target of the estimated unit costs based on the approved budget.

The outputs of the Defense Logistics Agency (DLA) Distribution Depots present a good example of the difference between unit cost and unit cost goal. These depots receive, store, and issue over 30 million items of supply for each of the Military Services as well as selected civil agencies. These items range in size from being as small as a radio transistor to as large as a vehicle. In addition, certain items have special handling requirements such as the need for refrigeration, added security to prevent theft, or additional packaging prior to shipment. Obviously, the cost of handling these items varies greatly. Due to the volume of workload, trying to determine an exact unit cost for each item would be difficult. However, for budgeting purposes, a unit cost goal of $28.56 for each item received and issued has been established as a target for the amount of costs to be incurred in receiving or issuing an item. This unit cost goal is a composite of approximately 40 separate processing and storage costs which will actually be incurred in support of customer orders.

Many support activities have more than one output. A few examples in the areas of transportation and finance were noted previously. To achieve the level of total cost visibility desired in the current support community, each output or groupings of outputs generated by the activity should have an established unit cost goal.

Each Component, then, provides a unit cost goal to its subordinate activities. Again, the activity cost goals may vary based on historical data, projected program changes, and other factors. This ability to vary unit cost goals among similar functional activities provides flexibility within the support community and instills a degree of fairness in evaluating an activity's progress toward providing efficient support to its customers.

To learn more about ABC, access the *Unit Cost Handbook* at the LearningSource!

About the OSD Comptroller iCenter

The OSD Comptroller iCenter is a comprehensive online information and education resource related to the DoD budget process, financial management, and best business practices.

For more information, visit the iCenter at:
http://www.dtic.mil/comptroller/